

- L 001 FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.  
H 001 \*\*\* REVISED GEOTECH 9/08 \*\*\*
- L 002 DRILLED PIERS AT BENT NO. \_\_\_\_ ARE DESIGNED FOR SKIN FRICTION ONLY. NO END BEARING CAPACITY IS REQUIRED.  
H 002 \*\*\* (LFD/ASD) REVISED GEOTECH 6/05 \*\*\*
- L 003 DRILLED PIERS AT BENT NO. \_\_\_\_ ARE DESIGNED FOR END BEARING ONLY. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF \_\_\_\_ TSF.  
H 003 \*\*\* (LFD/ASD) REVISED GEOTECH 6/05 \*\*\*
- L 004 DRILLED PIERS AT BENT NO. \_\_\_\_ ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF \_\_\_\_ TSF.  
H 004 \*\*\* (LFD/ASD) REVISED GEOTECH 6/05 \*\*\*
- L 005 DRILLED PIERS AT BENT NO. \_\_\_\_ ARE DESIGNED FOR AN APPLIED LOAD OF \_\_\_\_ TONS EACH AT THE TOP OF THE COLUMN.  
H 005 \*\*\* (LFD/ASD) REVISED GEOTECH 6/05 \*\*\*
- L 006 PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. \_\_\_\_\_. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION \_\_\_\_\_ FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT CASINGS.  
H 006 \*\*\* REVISED GEOTECH 3/10 \*\*\*
- L 007 PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT NO. \_\_\_\_\_. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION \_\_\_\_\_ FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER.  
H 007 \*\*\* REVISED GEOTECH 3/10 \*\*\*
- L 008 INSTALL PERMANENT STEEL CASINGS AT BENT NO. \_\_\_\_ BY VIBRATING, SCREWING OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION \_\_\_\_\_ FT.  
H 008 \*\*\* REVISED GEOTECH 3/10 \*\*\*
- L 009 DO NOT USE MULTIPLE TEMPORARY STEEL CASINGS IN A TELESKOPED ARRANGEMENT TO STABILIZE DRILLED PIER EXCAVATIONS AT BENT NO. \_\_\_\_\_.  
H 009 \*\*\* REVISED GEOTECH 3/10 \*\*\*
- L 010 INSTALL DRILLED PIERS AT BENT NO. \_\_\_\_ THAT EXTEND TO AN ELEVATION NO HIGHER THAN \_\_\_\_\_ FT AND SATISFY THE REQUIRED END BEARING CAPACITY.  
H 010 \*\*\* (LFD/ASD) REVISED GEOTECH 11/07 \*\*\*
- L 011 INSTALL DRILLED PIERS AT BENT NO. \_\_\_\_ THAT EXTEND TO AN ELEVATION NO HIGHER THAN \_\_\_\_\_ FT, SATISFY THE REQUIRED END BEARING CAPACITY AND HAVE A MINIMUM PENETRATION OF \_\_\_\_\_ FT INTO ROCK AS DEFINED BY THE DRILLED PIERS PROVISION.  
H 011 \*\*\* (LFD/ASD) REVISED GEOTECH 9/08 \*\*\*
- L 012 THE SCOUR CRITICAL ELEVATION FOR BENT NO. \_\_\_\_ IS ELEVATION \_\_\_\_\_ FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.  
H 012 \*\*\* REVISED GEOTECH 7/06 \*\*\*
- L 013 SPT TESTING IS REQUIRED FOR DRILLED PIERS AT BENT NO. \_\_\_\_\_.  
H 013 \*\*\* REVISED GEOTECH 11/07 \*\*\*

L 014 SPT TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SPT TESTING.  
H 014 \*\*\* REVISED GEOTECH 11/07 \*\*\*

L 015 DO NOT DEWATER DRILLED PIER EXCAVATIONS AT BENT NO. \_\_\_\_\_. CLEAN THE BOTTOM OF EXCAVATIONS WITH A SUBMERSIBLE PUMP OR AN AIRLIFT. WET PLACEMENT OF CONCRETE IS REQUIRED.  
H 015 \*\*\* REVISED GEOTECH 11/07 \*\*\*

L 016 DO NOT USE SLURRY CONSTRUCTION FOR DRILLED PIERS AT BENT NO. \_\_\_\_\_.  
H 016 \*\*\* REVISED GEOTECH 7/06 \*\*\*

L 017 SLURRY CONSTRUCTION IS REQUIRED FOR DRILLED PIERS AT BENT NO. \_\_\_\_\_.  
H 017 \*\*\* REVISED GEOTECH 11/07 \*\*\*

L 018 DO NOT USE POLYMER SLURRY FOR DRILLED PIERS AT BENT NO. \_\_\_\_\_.  
H 018 \*\*\* REVISED GEOTECH 7/06 \*\*\*

L 019 POLYMER SLURRY IS REQUIRED FOR DRILLED PIERS AT BENT NO. \_\_\_\_\_.  
H 019 \*\*\* REVISED GEOTECH 11/07 \*\*\*

L 020 SID INSPECTIONS ARE REQUIRED FOR DRILLED PIERS AT BENT NO. \_\_\_\_\_.  
H 020 \*\*\* REVISED GEOTECH 11/07 \*\*\*

L 021 SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS.  
H 021 \*\*\* GEOTECH 11/07 \*\*\*

L 022 CSL TUBES AND TESTING ARE REQUIRED FOR DRILLED PIERS AT BENT NO. \_\_\_\_\_. FOR CROSSHOLE SONIC LOGGING, SEE SPECIAL PROVISIONS.  
H 022 \*\*\* REVISED GEOTECH 9/08 \*\*\*

L 023 CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CROSSHOLE SONIC LOGGING, SEE SPECIAL PROVISIONS.  
H 023 \*\*\* REVISED GEOTECH 9/08 \*\*\*

L 024 INTEGRITY TESTING MAY BE REQUIRED FOR DRILLED PIERS. IF REQUIRED AND AFTER DRILLED PIER CONCRETE ACHIEVES 3000 PSI COMPRESSIVE STRENGTH, PROVIDE ACCESS TO AND PREPARE TOP OF PIERS AS DIRECTED BY THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR AND PERFORM INTEGRITY TESTING. DO NOT CONSTRUCT COLUMNS OR FOOTINGS ON TOP OF PIERS THAT ARE TESTED UNTIL TEST RESULTS ARE ACCEPTABLE. PAYMENT FOR COSTS ASSOCIATED WITH INTEGRITY TESTING WILL BE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE FOR THE DRILLED PIERS.  
H 024 \*\*\* REVISED GEOTECH 3/10 \*\*\*

L 025 DRILLED PIER EXCAVATIONS AT BENT NO. \_\_\_\_\_ WILL EXTEND INTO MATERIAL THAT DETERIORATES WHEN EXPOSED TO THE ELEMENTS. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY AND PLACE CONCRETE IMMEDIATELY AFTER THE EXCAVATION IS COMPLETED.  
H 025 \*\*\* (LFD/ASD) REVISED GEOTECH 7/06 \*\*\*

#### **END BENT WAITING PERIODS**

L 026 OBSERVE A \_\_\_\_\_ MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO. \_\_\_\_\_.  
H 026 \*\*\* REVISED GEOTECH 11/07 \*\*\*

- L 027 OBSERVE A \_\_\_\_ MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT, END BENT AND REINFORCED BRIDGE APPROACH FILL, IF APPLICABLE, BEFORE BEGINNING APPROACH SLAB CONSTRUCTION AT END BENT NO. \_\_\_\_.
- H 027 \*\*\* REVISED GEOTECH 11/07 \*\*\*
- L 028 OBSERVE A \_\_\_\_ MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO THE BOTTOM OF CAP ELEVATION BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO. \_\_\_\_.
- H 028 \*\*\* REVISED GEOTECH 11/07 \*\*\*

## **PILES**

- L 029 FOR PILES, SEE SPECIAL PROVISIONS.
- H 029 \*\*\* (LFD/ASD) GEOTECH 9/08 \*\*\*
- L 030 AT THE CONTRACTOR'S OPTION, SUBSTITUTE STEEL PILES IN LIEU OF PRESTRESSED CONCRETE PILES AT BENT NO. \_\_\_\_ WITH THE FOLLOWING CONDITIONS:
- H 030
- L 031 1) SUBMIT STEEL PILE TYPE AND SIZE TO THE ENGINEER FOR APPROVAL.
- H 031
- L 032 2) SUBSTITUTE GALVANIZED STEEL PILES IN ACCORDANCE WITH SECTION 450 OF THE STANDARD SPECIFICATIONS FOR INTERIOR BENT PRESTRESSED CONCRETE PILES WITHOUT CALCIUM NITRITE CORROSION INHIBITOR.
- H 032
- L 033 3) SUBSTITUTE METALLIZED STEEL PILES WITH AN 8 MIL THICK 1350 ALUMINUM (W-AL-1350) THERMAL SPRAYED COATING AND A 0.5 MIL THICK SEAL COAT IN ACCORDANCE WITH THE THERMAL SPRAYED COATINGS (METALLIZATION) PROVISION FOR ALL PRESTRESSED CONCRETE PILES WITH CALCIUM NITRITE CORROSION INHIBITOR.
- H 033
- L 034 4) REGARDLESS OF THE TYPE, SIZE OR QUANTITY OF STEEL PILES SUBSTITUTED, PAYMENT FOR STEEL PILES WILL BE MADE FOR THE PLAN QUANTITY OF PRESTRESSED CONCRETE PILES AT THE CONTRACT UNIT PRICE FOR THE PRESTRESSED CONCRETE PILES. NO ADDITIONAL PAYMENT WILL BE MADE FOR STEEL PILE QUANTITIES IN EXCESS OF THE PLAN QUANTITY OF PRESTRESSED CONCRETE PILES REPLACED.
- H 034
- L 035 5) NO ADDITIONAL PAYMENT WILL BE MADE FOR CORROSION PROTECTION (GALVANIZING OR METALLIZING), STEEL PILE POINTS OR PIPE PILE PLATES. THESE ITEMS WILL BE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE OF THE PRESTRESSED CONCRETE PILES.
- H 035 \*\*\* (LFD/ASD) REVISED GEOTECH 3/10 \*\*\*
- L 036 AT THE CONTRACTOR'S OPTION, SUBSTITUTE HP 12 X 53 STEEL PILES IN LIEU OF HP 10 X 42 STEEL PILES AT BENT NO. \_\_\_\_ AT NO ADDITIONAL COST TO THE DEPARTMENT.
- H 036 \*\*\* REVISED GEOTECH 6/05 \*\*\*
- L 037 DRIVE PILES AT BENT NO. \_\_\_\_ TO A REQUIRED BEARING CAPACITY OF \_\_\_\_ TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.
- H 037 \*\*\* (LFD/ASD) REVISED GEOTECH 7/06 \*\*\*
- L 038 DRIVE PILES AT BENT NO. \_\_\_\_ TO A REQUIRED BEARING CAPACITY OF \_\_\_\_ TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO PLUS ANY ADDITIONAL CAPACITY TO ACCOUNT FOR DOWNDRAW OR NEGATIVE SKIN FRICTION AND SCOUR.
- H 038 \*\*\* (LFD/ASD) REVISED GEOTECH 11/07 \*\*\*
- L 039 INSTALL PILES AT BENT NO. \_\_\_\_ TO A TIP ELEVATION NO HIGHER THAN \_\_\_\_ FT.
- H 039 \*\*\* REVISED GEOTECH 11/07 \*\*\*
- L 040 STEEL PILE POINTS (WITH TEETH) ARE REQUIRED FOR STEEL PILES AT BENT NO. \_\_\_\_.

H 040 \*\*\* (LFD/ASD) REVISED GEOTECH 11/07 \*\*\*

L 041 STEEL PILE TIPS ARE REQUIRED FOR PRESTRESSED CONCRETE PILES AT BENT NO. \_\_\_\_.

H 041 \*\*\* (LFD/ASD) REVISED GEOTECH 11/07 \*\*\*

L 042 THE SCOUR CRITICAL ELEVATION FOR BENT NO. \_\_\_\_ IS ELEVATION \_\_\_\_ FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

H 042 \*\*\* REVISED GEOTECH 7/06 \*\*\*

L 043 THE ALLOWABLE BEARING CAPACITY FOR PILES AT BENT NO. \_\_\_\_ IS \_\_\_\_ TONS PER PILE.

H 043 \*\*\* (LFD/ASD) GEOTECH 7/06 \*\*\*

L 044 IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF \_\_\_\_ FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO. \_\_\_\_\_. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM ARTICLE 450-5 OF THE STANDARD SPECIFICATIONS.

H 044 \*\*\* (LFD/ASD) REVISED GEOTECH 7/06 \*\*\*

L 045 DO NOT BEGIN WORK AT BENT NO. \_\_\_\_ UNTIL FILL HAS BEEN PLACED.

H 045 \*\*\* REVISED GEOTECH 6/05 \*\*\*

L 046 THE CONTRACTOR MAY CHOOSE TO CONSTRUCT BENT NO. \_\_\_\_ BEFORE PLACING FILL. PLACE FILL IN ACCORDANCE WITH ARTICLE 410-8 OF THE STANDARD SPECIFICATIONS.

H 046 \*\*\* REVISED GEOTECH 11/07 \*\*\*

L 047 THE QUANTITY SHOWN FOR FOUNDATION EXCAVATION IS BASED ON PLACING FILL BEFORE CONSTRUCTING BENT NO. \_\_\_\_\_. IF THE CONTRACTOR CHOOSES TO CONSTRUCT THE BENT(S) BEFORE PLACING FILL, THE QUANTITY FOR FOUNDATION EXCAVATION WILL BE MEASURED FROM THE GROUND LINE AT THE TIME OF BENT CONSTRUCTION.

H 047 \*\*\* REVISED GEOTECH 11/07 \*\*\*

L 048 TESTING PILES WITH THE PILE DRIVING ANALYZER (PDA) DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PILE DRIVING ANALYZER, SEE SPECIAL PROVISIONS.

H 048 \*\*\* (LFD/ASD) REVISED GEOTECH 9/08 \*\*\*

L 049 TESTING THE (FIRST) (PRODUCTION or TEST) PILE(S) WITH THE PILE DRIVING ANALYZER DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT BENT NO. \_\_\_\_\_. FOR PILE DRIVING ANALYZER, SEE SPECIAL PROVISIONS.

H 049 \*\*\* (LFD/ASD) REVISED GEOTECH 9/08 \*\*\*

L 050 PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT BENT NO. \_\_\_\_\_. EXCAVATE HOLES TO ELEVATION \_\_\_\_ FT. FOR PILE EXCAVATION, SEE SPECIAL PROVISIONS.

H 050 \*\*\* (LFD/ASD) REVISED GEOTECH 9/08 \*\*\*

L 051 PIPE PILE PLATES ARE NOT REQUIRED FOR STEEL PIPE PILES AT BENT NO. \_\_\_\_.

H 051 \*\*\* REVISED GEOTECH 3/10 \*\*\*

L 052 PIPE PILE PLATES ARE REQUIRED FOR PIPE PILES AT BENT NO. \_\_\_\_\_. USE PIPE PILE PLATES WITH A DIAMETER EQUAL TO THE PIPE PILE DIAMETER.

H 052 \*\*\* (LFD/ASD) REVISED GEOTECH 11/07 \*\*\*

L 053 PIPE PILE PLATES MAY BE REQUIRED FOR PIPE PILES AT BENT NO. \_\_\_\_\_. THE ENGINEER WILL DETERMINE THE NEED FOR PIPE PILES PLATES AFTER DRIVING TEST PILES OR A FEW INITIAL PRODUCTION PILES. USE PIPE PILE PLATES WITH A DIAMETER EQUAL TO THE PIPE PILE DIAMETER.

H 053 \*\*\* (LFD/ASD) REVISED GEOTECH 11/07 \*\*\*

## FOOTING ON PILES

- L 054 THE SCOUR CRITICAL ELEVATION FOR BENT NO. \_\_\_\_ IS ELEVATION \_\_\_\_ FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- H 054 \*\*\* REVISED GEOTECH 7/06 \*\*\*
- L 055 PIER SCOUR PROTECTION IS REQUIRED FOR FOOTINGS AT BENT NO. \_\_\_\_\_. DO NOT PLACE RIP RAP ABOVE THE STREAM BED.
- H 055 \*\*\* REVISED GEOTECH 7/06 \*\*\*

## SPREAD FOOTINGS

- L 056 THE SCOUR CRITICAL ELEVATION FOR BENT NO. \_\_\_\_ IS THE BOTTOM OF FOOTING ELEVATION. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- H 056 \*\*\* REVISED GEOTECH 7/06 \*\*\*
- L 057 THE REQUIRED BEARING CAPACITY FOR SPREAD FOOTINGS AT BENT NO. \_\_\_\_ IS \_\_\_\_ TSF. CHECK FIELD CONDITIONS FOR THE REQUIRED BEARING CAPACITY JUST BEFORE PLACING CONCRETE.
- H 057 \*\*\* (LFD/ASD) REVISED GEOTECH 11/07 \*\*\*
- L 058 THE ALLOWABLE BEARING CAPACITY FOR SPREAD FOOTINGS AT BENT NO. \_\_\_\_ IS \_\_\_\_ TSF.
- H 058 \*\*\* (LFD/ASD) GEOTECH 7/06 \*\*\*
- L 059 TO PROVIDE PROTECTION FROM POSSIBLE SCOUR, DO NOT CONSTRUCT SPREAD FOOTINGS AT BENT NO. \_\_\_\_ AT AN ELEVATION HIGHER THAN SHOWN ON THE PLANS.
- H 059 \*\*\* REVISED GEOTECH 7/06 \*\*\*
- L 060 (KEY or CARRY IN) SPREAD FOOTINGS AT BENT NO. \_\_\_\_ AT LEAST 12" INTO ROCK WITH MINIMUM THICKNESS AS SHOWN ON THE PLANS.
- H 060 \*\*\* REVISED GEOTECH 11/07 \*\*\*
- L 061 PIER SCOUR PROTECTION IS REQUIRED FOR SPREAD FOOTINGS AT BENT NO. \_\_\_\_\_. DO NOT PLACE RIP RAP ABOVE THE STREAM BED.
- H 061 \*\*\* REVISED GEOTECH 7/06 \*\*\*
- L 062 FOR BLASTING ADJACENT TO HIGHWAY STRUCTURES, SEE ARTICLE 410-9 OF THE STANDARD SPECIFICATIONS.
- H 062 \*\*\* REVISED GEOTECH 4/11 \*\*\*
- L 063 FOOTING EXCAVATIONS AT BENT NO. \_\_\_\_ WILL EXTEND INTO MATERIAL THAT DETERIORATES WHEN EXPOSED TO THE ELEMENTS. CHECK FIELD CONDITIONS FOR THE REQUIRED BEARING CAPACITY AND PLACE CONCRETE IMMEDIATELY AFTER THE EXCAVATION IS COMPLETED.
- H 063 \*\*\* (LFD/ASD) REVISED GEOTECH 7/06 \*\*\*

## CULVERT FOOTINGS

- L 064 CONSTRUCT THE REINFORCED CONCRETE BOX CULVERT AT STATION \_\_\_\_ WITH \_\_\_\_" OF CAMBER TO ACCOUNT FOR ANTICIPATED SETTLEMENT.
- H 064 \*\*\* REVISED GEOTECH 11/07 \*\*\*
- L 065 BACKFILL WITH SELECT MATERIAL, CLASS \_\_\_\_ MEETING THE REQUIREMENTS OF SECTION 1016 OF THE STANDARD SPECIFICATIONS. (Geotechnical Engineering Unit will determine select material class.)
- H 065 \*\*\* REVISED GEOTECH 11/07 \*\*\*

L 066 (KEY or CARRY IN) FOOTINGS FOR THE REINFORCED BOX CULVERT AT STATION \_\_\_\_\_ AT  
LEAST 12" INTO ROCK WITH A MINIMUM THICKNESS AS SHOWN ON THE PLANS.  
H 066 \*\*\* REVISED GEOTECH 11/07 \*\*\*